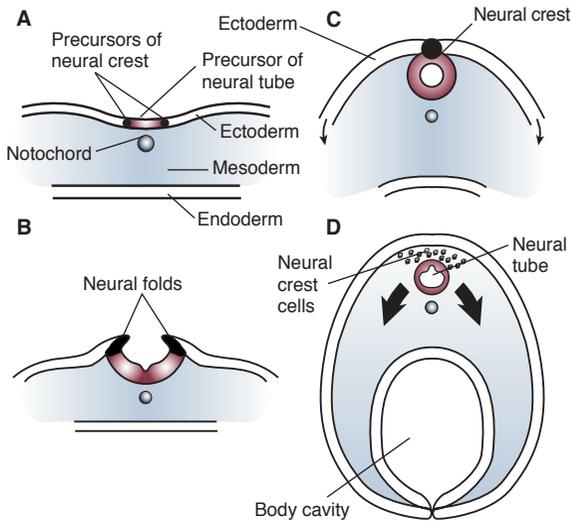


# Embryonic Development of the Nervous System



Formation of the neural tube (cross view). Early in an embryo's development, a strip of specialized cells called the notochord (A) induces the cells of the ectoderm directly above it to become the primitive nervous system (i.e., neuroepithelium). The neuroepithelium then wrinkles and folds over (B). As the tips of the folds fuse together, a hollow tube (i.e., the neural tube) forms (C)—the precursor of the brain and spinal cord. Meanwhile, the ectoderm and endoderm continue to curve around and fuse beneath the embryo to create the body cavity, completing the transformation of the embryo from a flattened disk to a three-dimensional body. Cells originating from the fused tips of the neuroectoderm (i.e., neural crest cells) migrate to various locations throughout the embryo, where they will initiate the development of diverse body structures (D). Researchers investigating fetal alcohol syndrome have extensively studied neural crest cells, because they are particularly sensitive to alcohol-induced injury and cell death.

Source: Goodlett, C.R., and Horn, K.H. Mechanisms of alcohol-induced damage to the developing nervous system. *Alcohol Research & Health* 25(3):175–184, 2001.

Prepared: February 2005